

Autonomous Robotics

Social Impacts

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Announcements

Last day 🎉🎉🎉

Final project key dates:

May 2: final deadline.

Please complete your course evaluation! 🙏

Final office hours on Tuesday May 6.

Grading should be complete by early next week.

Learning Outcomes

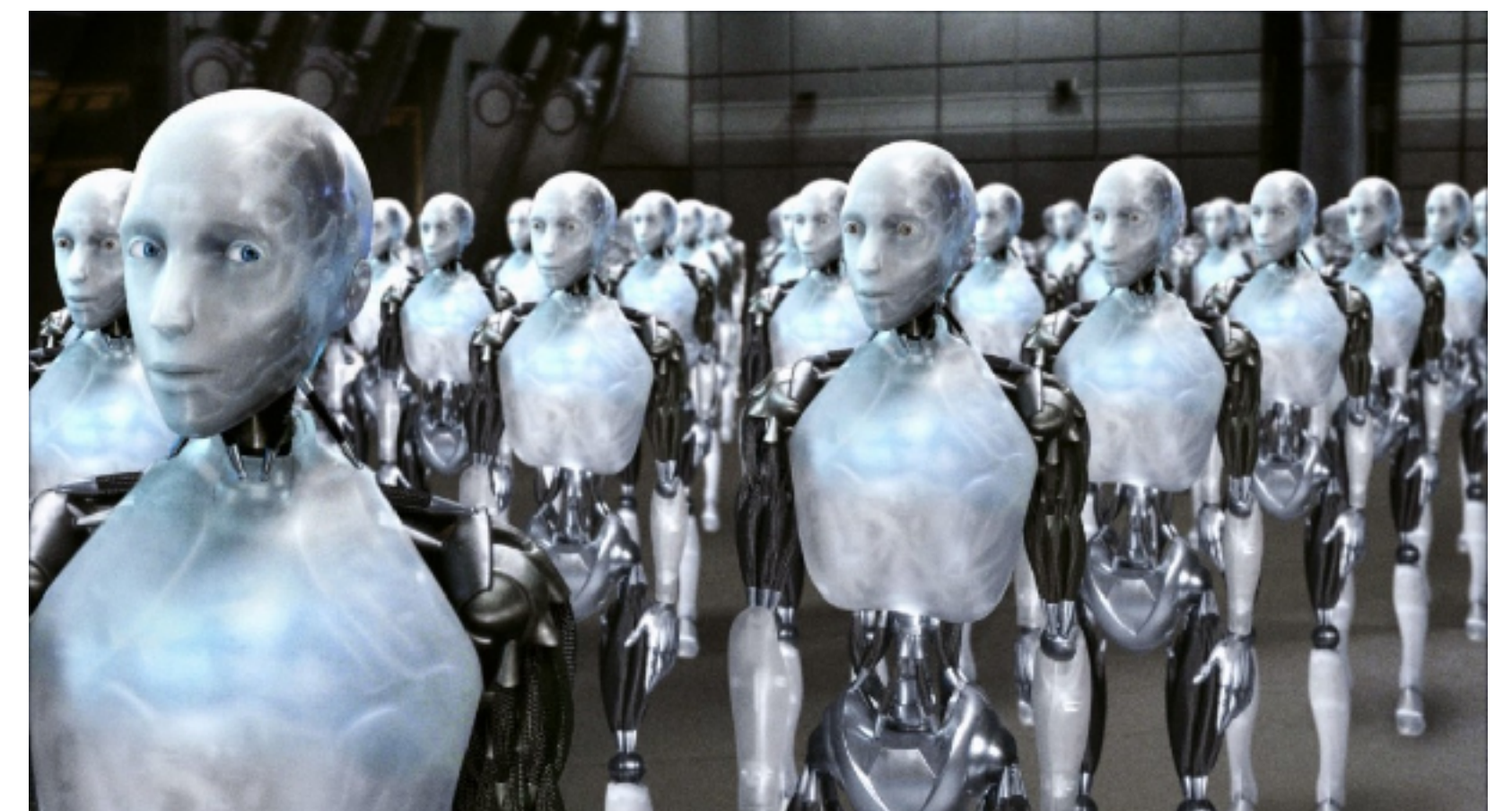
After today's lecture, you will:

- Be able to identify a set of broader societal concerns surrounding robotics.
- Have discussed navigating these concerns.

What if we succeed?

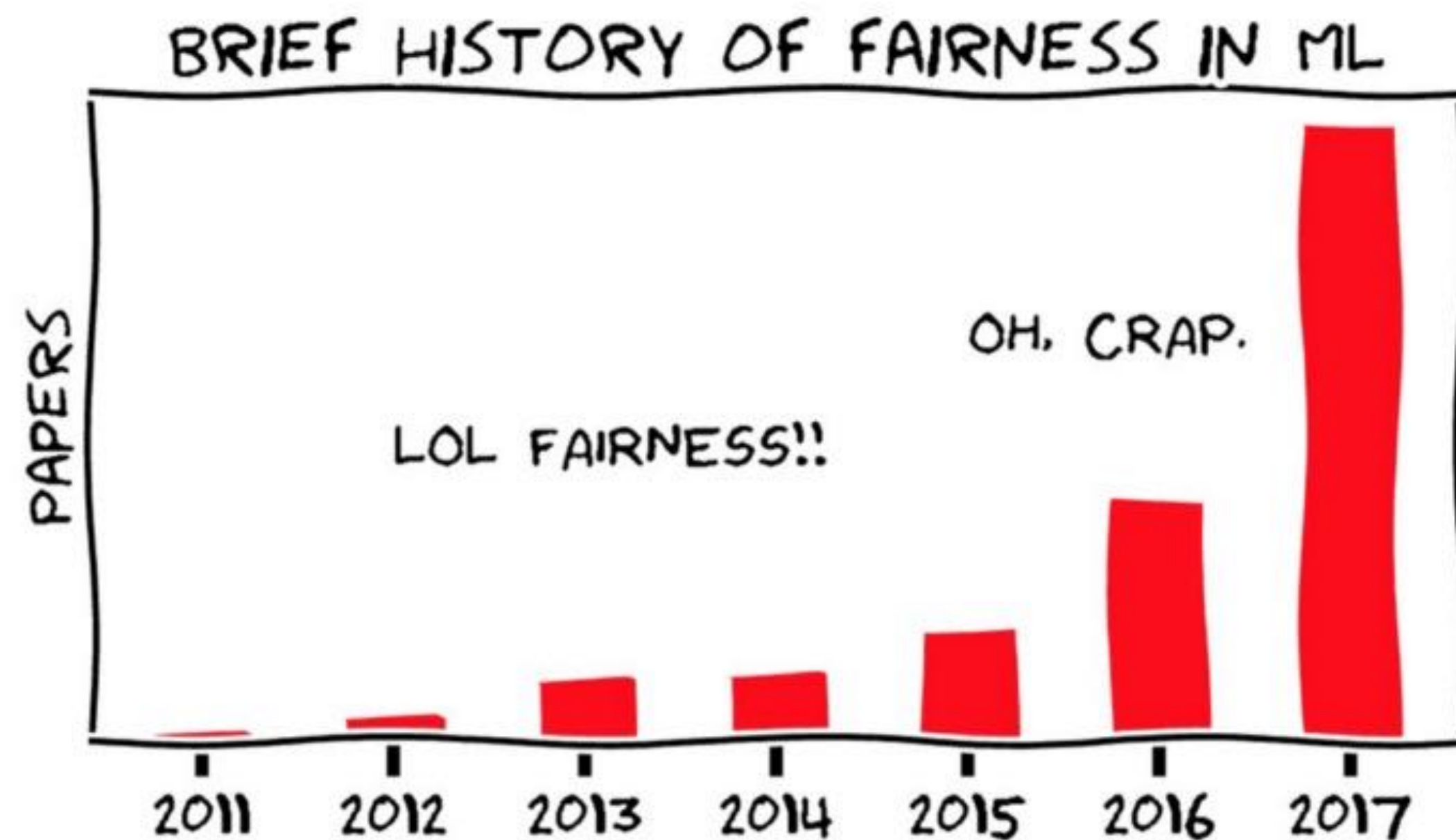
Asimov's Three Laws of Robotics

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.



AI Ethics

Robots are increasingly built using AI methods.



Our test used Amazon Rekognition to compare images of members of Congress with a database of mugshots. The results included 28 incorrect matches.

The false matches were disproportionately of people of color, including six members of the Congressional Black Caucus, among

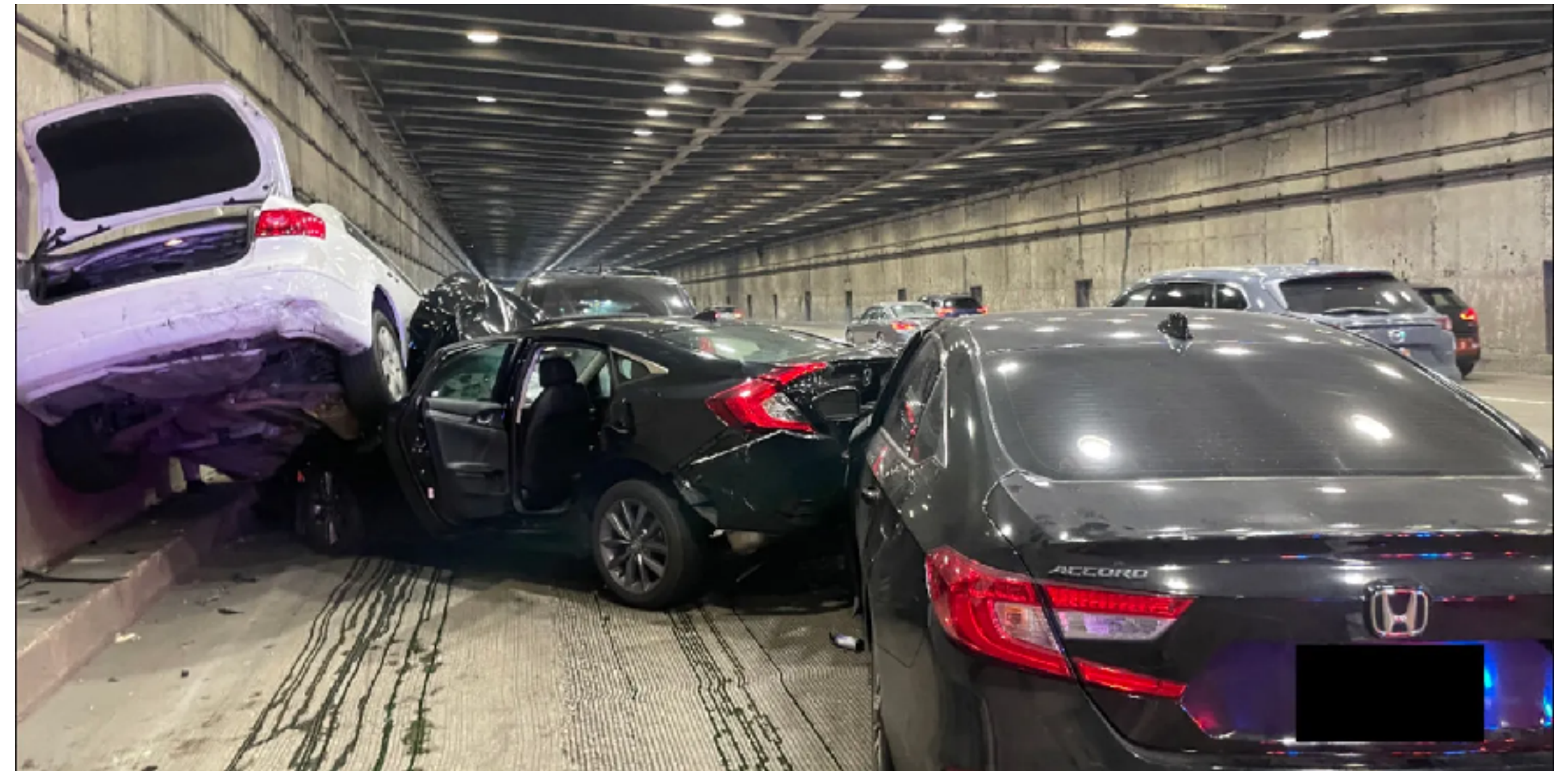
<https://www.aclu.org/blog/privacy-technology/surveillance-technologies/amazon-recognition-falsely-matched-28>

<https://towardsdatascience.com/a-tutorial-on-fairness-in-machine-learning-3ff8ba1040cb>

Responsibility

How can we develop guardrails for autonomous robots?

Who is responsible when a robot makes a mistake?



Military Usage

Robots are a dual-use technology.

- The technical challenges of search and rescue drones are similar to those of assassin drones.

The use of autonomy in warfare raises many questions:

- How autonomous should robots be in battle?
- When should a robot decide to use lethal force?
- Should a human always be in the loop for this decision?
- When is a lethal robot reliable enough for use?

Robot Rights

Should robots have rights?

As robot autonomy progresses, how would you determine when a robot should have a certain right?

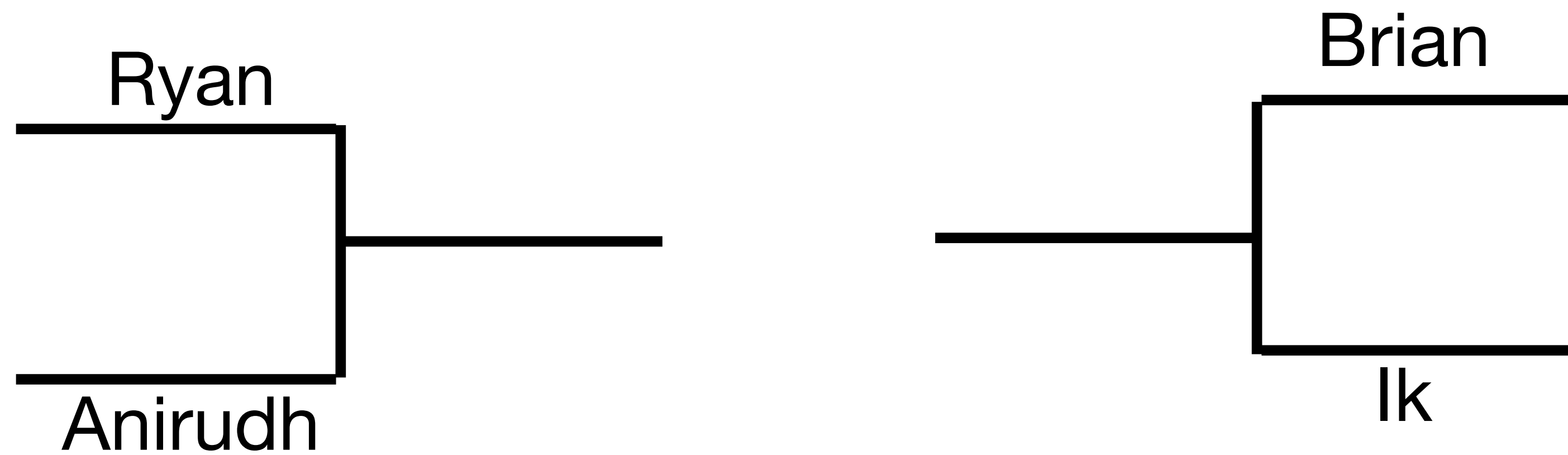


Sophia the robot
Saudi Arabia's first robot citizen

Further Reading (many others)

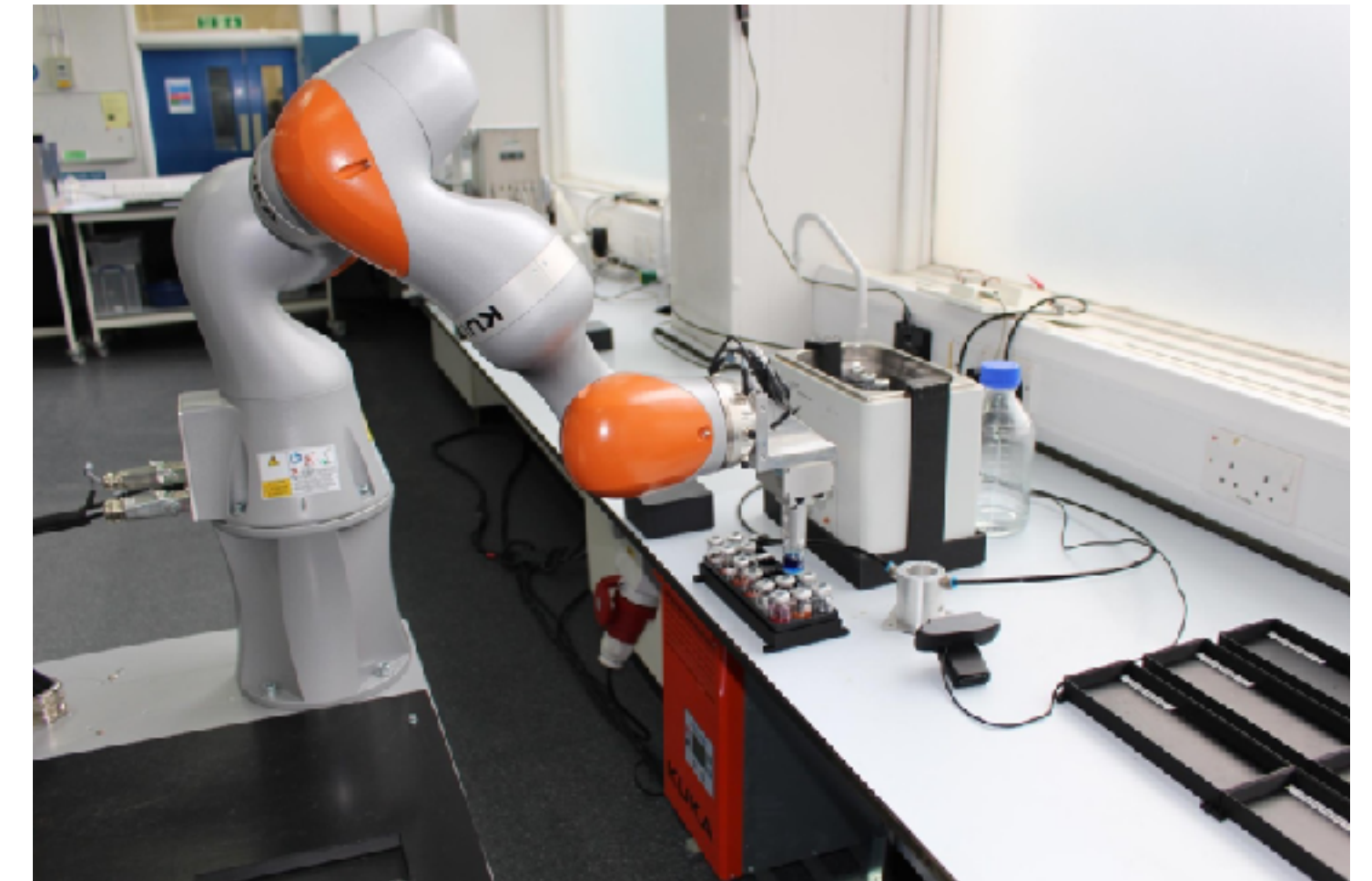
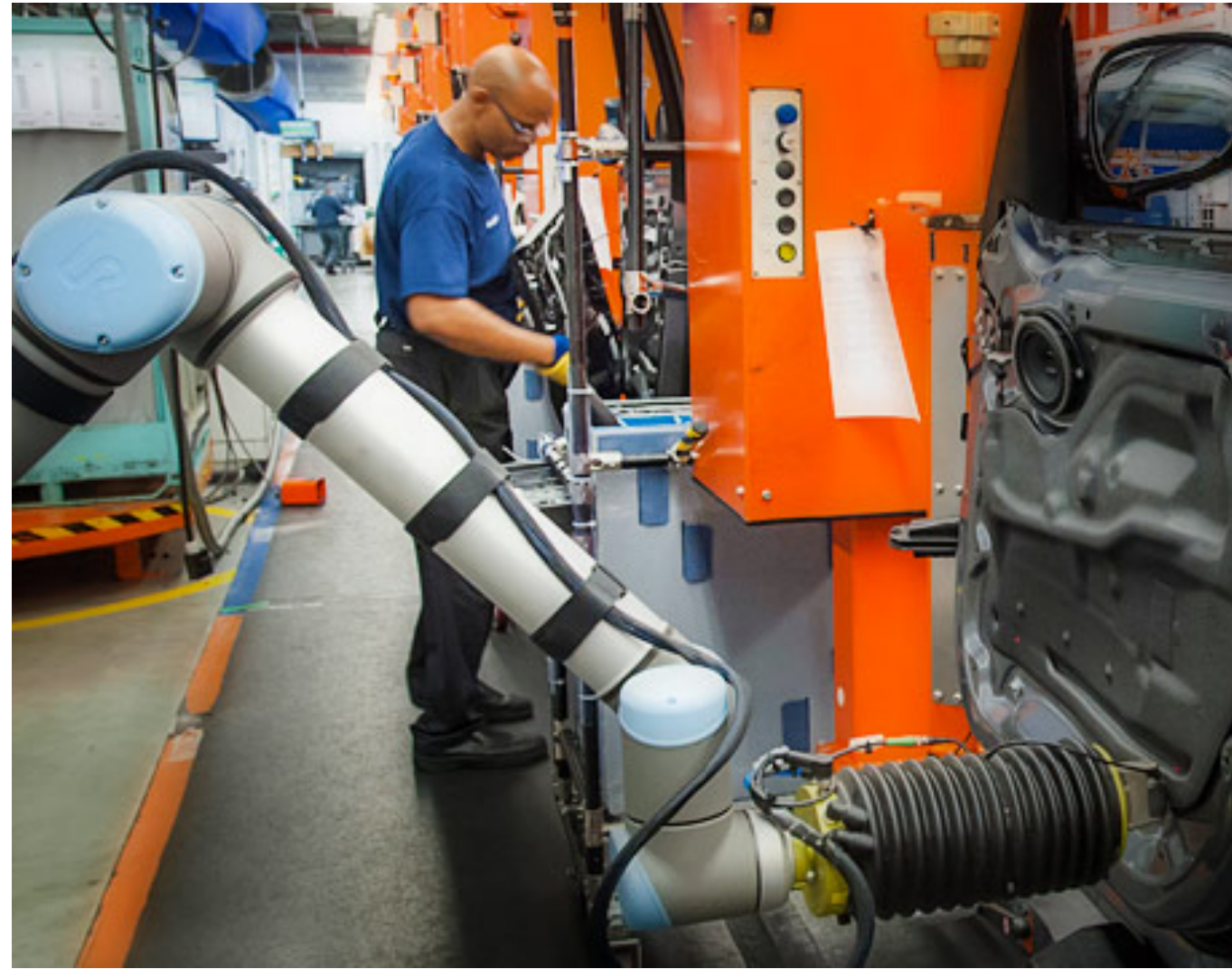
1. Weapons of Math Destruction - Cathy O'Neil
2. AI Superpowers - Kai-fu Lee
3. Who Owns the Future - Jaron Lanier
4. The Alignment Problem - Stuart Russell
5. Humans Need Not Apply - Jerry Kaplan

Tournament



Honorable mention: Saarthak, Mukund

Positive Impacts of Robotics



Action Items

Final project!

Congratulations and best wishes to everyone graduating!

Stay in touch!